

› IEA SHC TASK 60 & PVT IN SHAPE PROJECT

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TNO Energy Transition
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TNO innovation
for life

INTRODUCTION

› IEA SHC task 60, on PVT

- › PVT systems
- › PVT Performance
- › PVT Modeling
- › Systems and designs

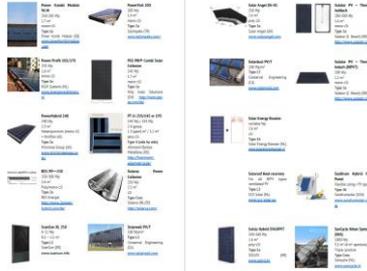
› Expert meetings

PVT inSHaPe project

- 3 different WISC water collectors
- heat source for the HP (no noise, no boreholes)
- Roof aesthetics

- Market study / opportunities & barriers
- Field test – performance
- System simulations (for single family houses)

The PVT inSHaPe project was realized with subsidy from the Topsector Energy of the Dutch Ministry of Economic Affairs

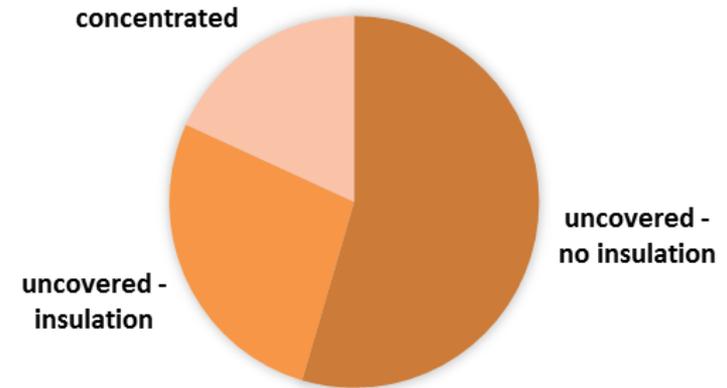


www.seac.cc > publications >
Solar Thermal and PVT

- › 10 uncovered (or WISC) PVT collector producers
- › 2 concentrated PVT



NUMBER OF PVT PRODUCERS IN THE NETHERLANDS



Without ventilated PV systems

BARRIERS & OPPORTUNITIES (2017 / 2018)

Barriers

- Complexity of system design and installation
- Lack of Testing Procedures and Certification
- Lack of Awareness
- High Investment Costs

Opportunities

- Compact (High Yield in Limited Roof Area)
- BIPVT & Aesthetics
- Combination with Heat Pump
- Energy Performance of Dwellings (EPC/BENG)



BARRIERS & OPPORTUNITIES (2017 / 2018)

Barriers

Addressed in Task 60

- Complexity of system design and installation
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- High Investment Costs

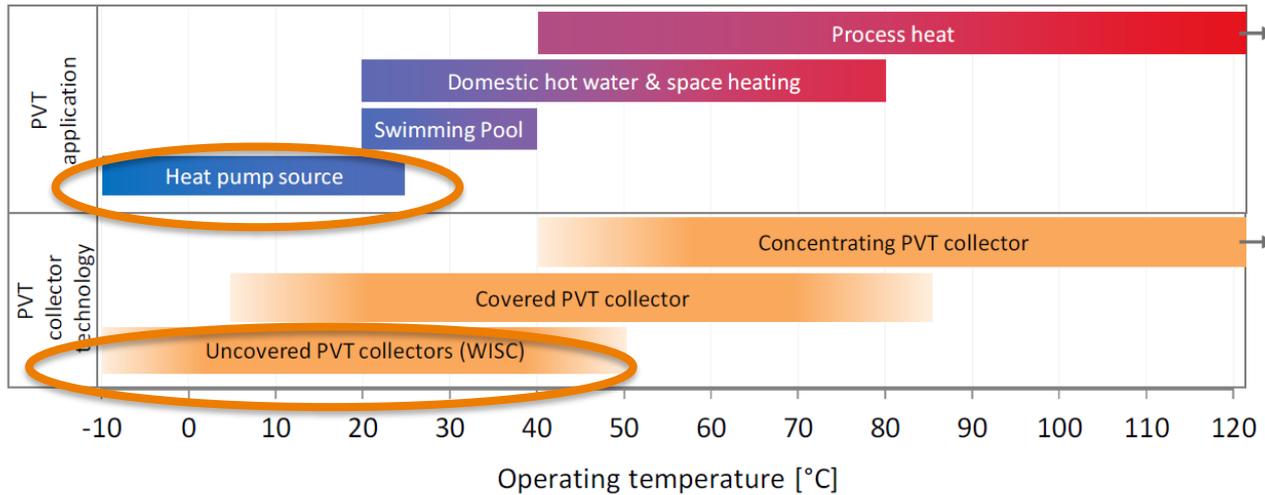
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TYPICAL SYSTEMS AND TEMPERATURES

› Focus on WISC, low temperatures



PVT COLLECTOR PERFORMANCE

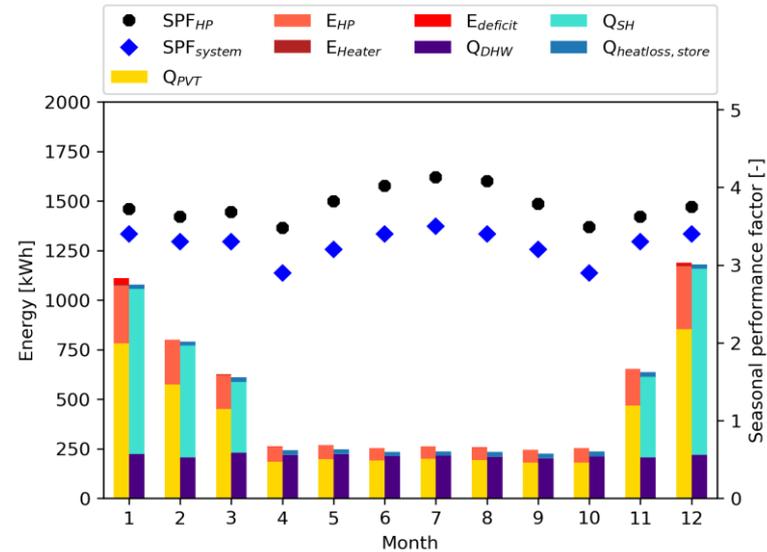
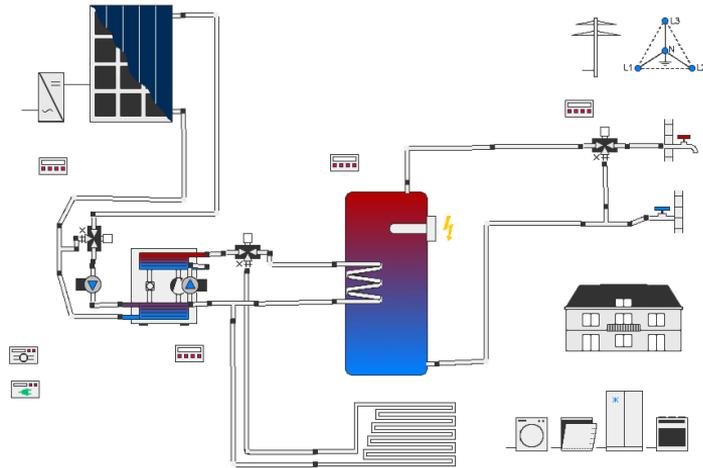


Field test set up:

- PV technologies: CIGS & cSi
- Different absorbers
- Connected to a heat pump



SIMULATIONS / RESULTS



Conclusion: it is feasible to use PVT collectors as a direct source for a heat pump. A better heat exchange with the ambient results in a lower needed collector area.

IEA SHC TASK 60 – INDUSTRIAL WORKSHOP TASK MEETING MAY 2019

Organised by TNO and TU Eindhoven



THANKS FOR YOUR ATTENTION

Questions?



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